

THERAPEUTIC PARTIAL CAUDECTOMY FOR SEVERELY INJURED TAIL IN A PERSIAN CAT

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Abstract: A 3 year old male Persian cat was brought to the Teaching Veterinary Clinical Complex with the complaint of injury on the tail due to dog bite. Clinical examinations revealed sanguineous discharge from tail producing unpleasant smell and half of the tail was necrosed. Cat was in severe pain but there was no tail fracture. The physiological parameters were within normal range and the condition of animal was in good state with good appetite. Partial caudectomy of the tail was performed by giving U shaped skin incision at the level above the injury under general anaesthesia using xylazine @ 0.8 mg/kg i/m and ketamine @ 5 mg/kg i/v. The skin was close with interrupted sutures pattern using silk no 1. after taking all aseptic precautions. Routine post operative care i.e. Cefotaxime (250 gm i/v), Meloxicam (0.5 ml i/m), Tribivet (0.5 ml i/m) alongwith antiseptic dressing with betadine solution and Mupirocin ointment was done for 7 days. Following surgery, on the tenth day, the sutures were removed and the tail stump healed without incident.

Keywords: Cat, Caudectomy, Injury, Tail.

Introduction

Cats' tails are beautiful, expressive body parts that are used for both balance as well as communication. The tail consists of 18-23 caudal vertebrae which are held together by six voluntary muscles with ligaments and tendons to allow for flexion, extension, and lateral movements (Walker *et al.*, 1998). In non-domesticated cats, tail damage is often caused by animal bites and scratches, as well as, regrettably, by malevolent intent (Sehic, 2000). Among domesticated cats, tail trauma is typically caused by an accident with doors (their tail getting stuck in the door), inadvertent footfall, or having their tails barely tugged by humans. One major component of traumatic wounds, particularly in case of cats are bite wounds (Bubenik, 2005). The wound is often visible as a few tiny punctures in the skin caused by the teeth. However, a significant amount of muscle, tendon, and subcutaneous tissue are damaged by the canine teeth's crushing and tearing action. Bite wounds are infected by microorganisms from the biting animal's oral flora, the victim's skin bacteria, and frequently soil organisms. Bacterial contamination, devitalized parosteal tissue and periosteum, dead tissue, and inflammatory exudates are most likely the several factors that contribute to the development of infection in bite wounds (Johnson *et al.*, 2006). Although puncture wounds on the skin

might heal but the underlying infection may continue and develop as an abscess underneath the periosteum or as an expansion of the surrounding subcutaneous tissue into the periosteum itself. Tail gangrene and necrosis are consequences of neglected or untreated bite wounds bite wounds (Sia and Berbari, 2006). Amputation of the tail is the treatment of choice to stop further damage when diseases of the tail do not respond to standard medical therapy. Caudectomy or amputation of portion of the tail is termed as tail docking. In dogs, tail docking is a cosmetic procedure without any apparent benefit and is commonly performed as a routine surgical procedure (Bennett and Perini, 2003). Nowadays, tail docking is done for prophylactic (to pre-vent injury), therapeutic, and cosmetic purposes. Amputation of the tail was necessary because diseases of the tail did not respond to standard medical treatment. Diseases of the tail did not respond to the routine medical treatment which necessitates the amputation of the tail. Therapeutic tail caudectomy is indicated in cases of severe tail injury or chronic wounds such as traumatic lesions, infections, neoplasia and perianal fistula where conservative management methods have poor prognosis for healing or acceptable cosmetic results (Hedlund, 2002; Aronson, 2003). Caudectomy or tail amputation should only be performed on those dogs whose tail or associated structures have been injured or where there is occult pathology of this appendage (Wansbrough, 1996). Tail docking can be done in either of the two techniques. The first method by using a rubber ligature, stops the blood flow to the tail for a few days, or until the tail comes off. On the other hand, the second method entails using a scalpel or surgical scissors to amputate the tail. The tail should be amputated with 2 to 3 cm of the normal tissue margins when resecting tumours or traumatic lesions (Fossum, 2002). Tail docking lengths vary among breeds and are frequently specified in the standard breed. Amputation near the base is recommended for avulsed tails and if necessary for tail fold pyoderma and perianal fistula. Traditionally, owners of certain working and hunting dogs such as German short haired pointers had their dog's tail docked because it was thought to reduce the chances of trauma or injury to the tail while the dog performed its duties. It was also thought that tail docking would help to prevent a long tail from becoming soiled while the dog was working. However, limited scientific evidence exists to support these assertions. Complications of tail amputation include bleeding, dehiscence, and infection. The present case reports a successful therapeutic partial caudectomy for severely injured tail in a Persian cat.

Case history and observation

A 3 year old male Persian cat was brought to the Teaching Veterinary Clinical Complex with the complaint of injury on the tail due to dog bite (fig. 1.). Clinical examinations revealed sanguineous discharge from tail producing unpleasant smell and half of the tail was necrosed (fig.2.). Cat showed severe pain on palpation but there was no tail fracture. The physiological parameters were within normal range and the condition of animal was in good state with good appetite. Using a artery forceps to squeeze the tail, a tail nociception test was conducted on the cat to see whether it responded to the stimuli consciously and the animal's conscious reaction to the stimulation was noted. Therefore, it was decided to perform partial caudectomy above the level of injury to stop the spread of infection.

Surgical technique and Discussion

Pre-operatively, the cat was withheld 12-hours from feed and 6-hours from the water before start of surgery. Routine asptic procedures were followed for preparation of the surgical site. The cat was placed in lateral recumbency, and the area surrounding the damaged tail was carefully cleaned with soap and water thoroughly. Then, the area around the wound was aseptically prepared by clipping, shaving, scrubbing, washing with water and betadine liquid. Cat was restrained properly and general anaesthesia was given in a combination of xylazine @ 0.8 mg/kg i/m and ketamine @ 5 mg/kg i/v and 2% lignocaine HCl was infiltrated around the proposed surgical site. The cat was kept on fluid therapy after sedation (5% DNS) to maintain the acid-base balance. After proper anaesthetic protocol and aseptically preparation of the site, the partial caudectomy of the tail was carried out according to Fossum (2002). By use of digital palpation, the intervertebral spaces preceding and following the selected tail vertebra for transection were determined prior to skin incision. After applying a tourniquet at the base of the tail root, two U shaped incisions was made on the skin 1 to 2 cm distal to the joint space at the level above the injury one on dorsal surface and other on ventral surface (fig.3.). Using curved Mayo scissors or a scalpel blade, attachments between the skin and vertebrae were transected. The dorsal and ventral skin flaps were elevated caudally (fig. 4.) so that prominent vessels at the lateral and ventral sides are identified and ligated proximal to the proposed site of caudectomy using chromic catgut No. 1. Intervertebral space was located by palpation and with help of scalpel blade cut through the intervertebral space by incising perpendicular to long axis of the tail into intervertebral space (fig. 5 and 6) and the connecting ligaments and muscles. The distal portion of the tail was then removed. Any bleeding from vessels were ligated or cauterized. The dorsal and ventral skin flaps were

pulled cranially to provide a tension-free closure. The skin flaps were sutured by interrupted sutures pattern using silk no 1. after taking all aseptic precautions (fig.7). The excessive skin was trimmed for perfect apposition of the skin edges. After surgery, tourniquet was removed from the base of tail. Finally, the tail stump was properly cleaned with betadine liquid and was bandaged with gauze having betadine ointment. Routine post operative care i.e. Cefotaxime (250 gm i/v), Meloxicam (0.5 ml i/m), Tribivet (0.5 ml i/m) along with antiseptic dressing with betadine solution and Mupirocin ointment was done for 7 days. The sutures were removed after 10th day post surgery and tail stump healed without any incident and recovered uneventfully. An Elizabethan collar was applied to the animal from licking the wound.

The treatment of tail necrosis depends on the severity of lesions, two regimes of treatment were adopted: (i) medicinal treatment was applied for the early mild tail necrosis (ii) surgical treatment was carried out for the severe gangrenous tail necrosis. Cats rely on their tails for balance and navigation, but with a little training, they may become independent of tail and operate it normally without significant impairment (Simonds *et al.*, 2014). Tail vertebrae are surrounded by closely attached dorsal (sacrocaudalis dorsalis lateralis and medialis), ventral (sacrocaudalis ventralis lateralis and medialis), and lateral (intertransversarius dorsalis caudalis and intertransversarius ventralis caudalis) bulky muscles. The main blood supply can be found on both lateral sides of the tail (lateral caudal arteries), with smaller dorsal (dorsolateral caudal arteries) and ventral (median caudal and ventrolateral caudal arteries) arteries. Amputation of the tail is frequently advised in cases of severe infection, particularly in small animals whose tails are also fractured and necrosed. This will help to treat the infection site permanently and to prevent further injury to the nerves that supply the urethra and anus. In the present case, the tail was severely injured in cat due to a dog bite during fighting with another dog, so partial caudectomy was done to prevent further infection. After traumatic tail injury, as much as after tail amputation the cat would need to rest in a crate or cage. This work agreed with Olatunji-Akioye *et al.* (2010) and Eyarefe *et al.* (2015) also reports life saving tail amputation in an African lioness due to self tail mutilation triggered by an irritation of unknown etiology. Similarly, Fesseha (2020) reported a case of severely injured tail in dog due to bite during fighting with another dog and cosmetic tail docking was conducted for amputating the tail. Besides, this finding also supported by Ural *et al.* (2007) who employed amputation in severely affected cattle tail. Tail amputation without a tourniquet (especially for more distal amputations or in smaller patients) requires haemostasis

in individual vessels as they are transected, rather than several at once after release of the tourniquet. In the above case, tourniquet was applied at the base of the tail as it decrease haemorrhage and improves visualization. Olatunji-Akioye *et al* (2010); Nuss and Fiest (2011) suggested a cranial amputation of the affected area. They opined, the injuries near the end of the tail often resulted in dry gangrene and suggested that the tail should be dealt with amputations long before it got to the point of drying and becoming brittle. In the present case, tension-free skin closure was done which reduce the risk for postoperative dehiscence and removal of an additional vertebra can be considered if there is tension. Affected cases are typically of young male cats with an outdoor and active lifestyle (Caraty *et al.*, 2018). However, any cat can be affected since indoor cats can trap the tail in a door or catch the tail when jumping down. Malicious events with people or motor vehicle accidents could also play a role in this injury. The causal agent of the injury in this case was dog bite. The existence of large numbers of stray dogs, which serve as the cats' main predators. In the present case, the cat was successfully treated with partial caudectomy with any complications and animal showed uneventful recovery.

Summary

Successful therapeutic partial caudectomy was performed in severely injured tail in a Persian cat due to dog bite.

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Fig. 1. Severely injured tail due to dog bite in a Persian cat



Fig. 2. Tail injury with necrosed area and sanguineous discharge from the tail.



Fig. 3. Partial caudectomy of tail by giving U shaped incisions above the level of injury



Fig. 4. Skin flaps were elevated to exposed vessels and intervertebral space



Fig. 5. With help of scalpel blade intervertebral space was incised



Fig. 6. After removal distal portion of severely tail



Fig. 7. Both skin flaps were sutured by interrupted sutures pattern